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A new species of *Amomum* (Zingiberaceae) from Borneo

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Summary. A new species, *Amomum staminidivum*, is described from a heath forest (*kerangas*) in Nabawan, Sabah. The most conspicuous characters of this species are the exserted filament with pending anther and the white labellum with a purple central band.

Currently, the total number of *Amomum* species, including *Amomum staminidivum*, recorded for Sabah, Sarawak and Brunei increases to 41. There are 26, 22 and 12 species of *Amomum* occurring in Sarawak, Brunei and Sabah respectively. However, this estimate is rather biased because the revision for Bornean *Amomum* by Smith (1985, 1986) and Sakai & Nagamasu (1998) placed more emphasis on the Sarawak species. Though some species have also been described from Sabah, the genus is less known in this state, with many species still remaining undescribed or not documented yet.

Amomum staminidivum *J. Gobilik, A. Lamb & A.D. Poulsen* **sp.nov.** *Haec species quoad filamentum Amomo uliginoso similissimum erectum e labello exsertum, sed in antheris nutantibus labello spathulato nec ovato differt. Labellum album vitta centrali purpurea ad atrorosea hac specie singulare. Typus: Gobilik, J., Lamb, A., Poulsen, A.D. & Lam, N.F., G 736, Malaysia, Sabah, Nabawan, Kg. Tetagas, Agriculture Department Reserve Forest, northeast of the forest reserve, (holotypus SAN; isotypi KEP, SING, AAU, K).*

(Figs. 1 & 2)

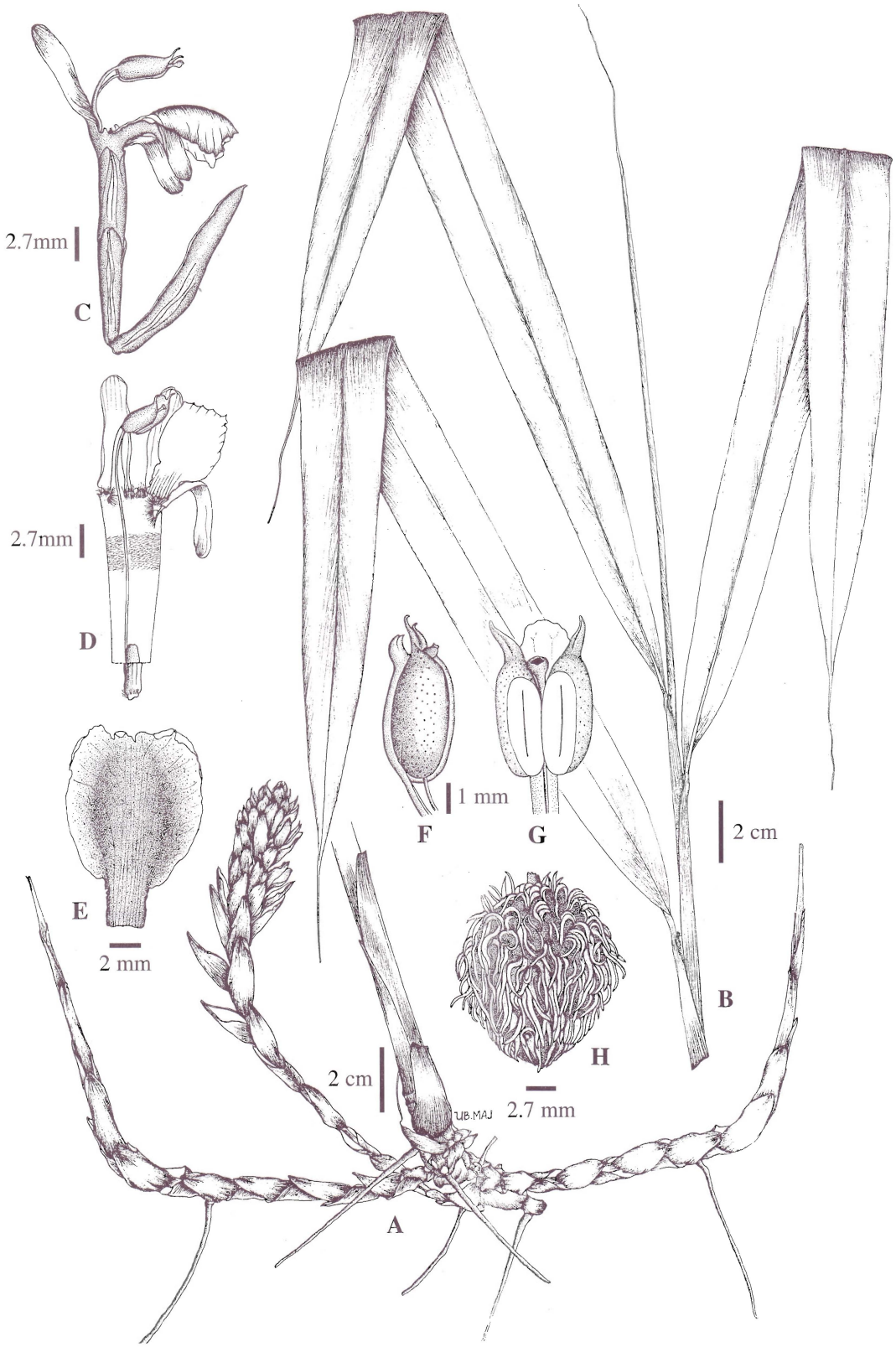

Fig. 1. *Amomum staminidivum*. **A.** Rhizomes and inflorescence. **B.** Top of leafy shoot. **C.** Flower subtended by a bract. **D.** Dissected flower. **E.** Labellum. **F–G.** Anther showing anther crest and position of style and stigma (side and front view). **H.** Fruit. All drawn from *Gobilik 736* by Ubaldus Majawal.

Terrestrial herb, 0.6–1.2 m tall, in a loose clump of stems, *c.* 9 cm apart. Rhizome subterranean or on the ground, fibrous, glabrous; stilt root brownish and densely pubescent; rhizome scales 2 × 1.5 cm, dark brown to light brown, glabrous, margin densely hairy, apex acute. Leafy shoot bases brown. Leaf sheaths green, glabrous, smooth or striate not reticulate, margin densely hairy; first leaf sheath scale-like. Ligule unilobed, 3 mm long, densely hairy, apex truncate. Petiole 5 mm long, glabrous. Lamina linear, 18–38 × 1.8–3.1 cm, upper surface green, lower surface light green, glabrous; base attenuate, margin entire to sparsely hairy towards the apex, apex setose or long acuminate, *c.* 3.5 cm long, apex tip pubescent. Inflorescence arising from subterranean rhizome, 2–4 cm distance from the base of the leafy shoot, trailing shortly and erect, normally 1–2 per leafy shoot; peduncle (4–)9–12(–15) cm long; sterile bracts on peduncle 4–25 × 4–10 mm, brown, papery, glabrous, margin sparsely hairy or glabrous, apex acute except bracts at the base with pungent apex; fertile inflorescence 60 × 17 mm; fertile bracts lanceolate, 2 × 6 mm, slightly stout, papery, light brown, glabrous to hairy at base, margin entire, dark brown, membranous, apex obtuse, membranous. Flowers white to creamy, fleshy, one flower per bract; bracteoles tubular, 10 mm long, base glabrous to densely hairy, apex bilobed or truncate with 1 mm slit at the center, lobes 1 mm long, apex acute; calyx tubular, 17 mm long, shorter or slightly shorter than corolla tube, glabrous, bilobed, lobes 2 mm long, apex mucronate with needle-like beaks of *c.* 2 mm long; corolla tube 21 mm long, outer surface glabrous, inner surface hairy, apex densely hairy; corolla lobes connate to the base of labellum; dorsal lobe oblong, 11 × 2 mm, apex blunt, slightly hooded, brownish, apex tip with pale purplish smear, glabrous; lateral lobes oblong, 8 × 2 mm, apex blunt, slightly hooded, brownish, glabrous; labellum spathulate, 10 × 4 mm, curved outward, white to creamy with dotted purple to dark pink central band, which starts from the throat and fades out towards the apex, margin entire, fringed near the apex, apex truncate, praemorse or irregularly tridentate with a minute central beak. Stamen 9 mm long, exserted from the labellum; filament erect, 5 × 1 mm, pale purplish, glabrous; anther nodding, 4 × 2 mm, pale brownish orange, glabrous; anther crest trilobed, lobes irregular, central lobe 1 × 2 mm, entire or emarginate, lateral lobes triangular with acute tip, 2 × 1 mm, occasionally similar size to the central lobe or much thinner; anther thecae 4 × 1 mm, white, dehiscing throughout its length. Stigma peltate, protruding 1 mm from the anther, pale brown, glabrous; style filiform, 24 mm long, pale white, glabrous, adhered to filament, loose beyond anther thecae, free from the corolla tube; staminodes linear or spathulate, 1(–3) × 1 mm; epigynous glands oblong, 2 × 1 mm, white, glabrous, adhered to style. Ovary 2 mm across, hairy, trilocular; ovules few in each locule, axile placentation. Fruits globose, dark green turning to pale white, echinate with 2 mm long soft appendages. Seeds not seen.

DISTRIBUTION. Kg. Tetagas, Nabawan at the type locality and from Kalang, Tenom, Sabah, Malysia and Sg. Wain, Balikpapan and Pa Dilio, Krayan, Kalimantan, Indonesia.

ECOLOGY. On sandy soils and heath forest; fruiting and flowering at the same time.

SPECIMENS EXAMINED—BORNEO. SABAH: Tenom, Kalang, *W. Meijer* SAN 121373 (SAN); Nabawan, Agriculture Department Reserve Forest, Kg. Tetagas, *Anthony Lamb s.n.* (Tenom Orchid Centre, Sabah); Nabawan, Kg. Tetagas, Agriculture Department Reserve Forest, northeast of the forest reserve, *Gobilik, et al.,* G 736 (AAU, K, KEP, SAN, SING). KALIMANTAN: Balikpapan, Sg. Wain, *Poulsen* 2113 (B, L, WAN); Krayan, Pa Dilio 2200 (AAU, L, WAN)

Amomum staminidivum has an erect filament exserted from the labellum, which closely resembles the filament of *Amomum uliginosum* Koenig, but the new species differs in having a nodding anther and the labellum being spathulate rather than ovate. The new species possesses echinate fruits with soft appendages, like that of *Nephelium lappaceum* L. (Sapindaceae) fruits, which is also similar to fruits of *Amomum uliginosum* Koenig. *Amomum staminidivum* also resembles *Amomum boreali borneense* I.M. Turner by having an exserted stamen, a trilobed anther crest, slightly stout papery bracts, densely ciliate or pubescent leaf sheaths and ligule margin, linear leaves with long acuminate apices. However, *Amomum boreali borneense* I.M. Turner differs by having larger flowers, an ovate labellum with a yellow central band flanked by red bands, a tridentate epigynous gland apex, globose and hairy fruits (rather than echinate) and the leafy shoots forming clumps.

Fig. 2. Inflorescence and infructescence of *Amomum staminidivum* (Photo: A. Lamb)

The white labellum with a purple to dark pink central band is also unique to this new species. In general, species of *Amomum* with a white labellum have a plain yellow central band (*e.g.*, *Amomum testaceum* Ridley and *Amomum compactum* Sol. ex Maton) or the yellow central band is flanked by red bands (*e.g.*, *Amomum uliginosum* Koenig and *Amomum borealiborneense* I.M. Turner).

The new species described in this paper does not match univocally with any of the previously proposed groups. Based on Smith's (1985) informal grouping of *Amomum*, *Amomum staminidivum* fits Group IV by having one flower per bract, anther thecae dehiscing throughout it's length, lateral petals free from the labellum, anther connective crested and the presence of staminodes. The species in Group IV have also been reported to have tubular bracteoles (Sakai & Nagamasu, 1998), which fits *Amomum staminidivum* as well. In contrast, *Amomum staminidivum* has a corolla tube that is slender and slightly longer than its calyx, which also fits Group III and V of Smith's (1985, 1989) informal groups.

The classification of Zingiberaceae, however, is still subject to change. For example, Kress *et al.* (2002) in their new classification of the Zingiberaceae, placed *Amomum* under the tribe Alpinieae in the subfamily Alpiniodeae. Although this new classification does not change the position of *Amomum* in the tribe Alpinieae, there are indications that the genus is polyphyletic and certain species might possibly be shifted to different genera in the future. Until molecular work has been carried out it is uncertain which species are the closest relatives of *Amomum staminidivum*.

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REFERENCES

Kress, W.J., L.M. Prince & K.J. Williams (2002) The phylogeny and a new classification of the gingers (Zingiberaceae): Evidence from molecular data. *American Journal of Botany* 89: 1682–1696.

Mood, J. (1996) The native gingers of Sabah. *Bulletin Heliconia Society International* 8: 1–8.

Sakai, S. & H. Nagamasu (1998) Systematic studies of Bornean Zingiberaceae I. *Amomum* in Lambir Hills, Sarawak. *Edinburgh Journal of Botany* 55: 45–64.

Smith, R.M. (1985) A review of Bornean Zingiberaceae: I (Alpineae). *Notes RBG Edinburgh* 42: 261–314.

———— (1986) A review of Bornean Zingiberaceae: II (Alpineae, concluded). *Notes RBG Edinburgh* 43: 439–466.

———— (1989) Two additional species of *Amomum* from Borneo. *Notes RBG Edinburgh* 45: 337–339.